

*Cenchrus* and six species of *Pennisetum*. The basic pattern of the fascicles of all species of *Cenchrus* included here is similar.

The spikelets themselves are terminal in the fascicles of *Cenchrus*, and the bristles represent sterile first-order axes and their branches all fused laterally, these at one time belonging to an elongated inflorescence whose axis has become shortened and whose lateral branches have become sterile.

*C. myosuroides* has a 1-flowered fascicle, but possesses two lateral vascular bundles which terminate blindly, suggesting that the fascicle may have possessed three spikelets at one time.

The two-partedness of the involucre may be attributed primarily to the enlargement of the central spikelet and not, as heretofore maintained, to a "two-branch" system.

Four fascicle patterns were found in the six species of *Pennisetum*. In five of these species the axis of the fascicle is prolonged as a prominent bristle which is interpreted as an axis continuation. The fascicle of *P. ciliare*, with the bases of the bristles fused laterally, resembles the fascicles of *Cenchrus*, but the presence of the long bristle (the fascicle axis) places the species in *Pennisetum*. The highly modified inflorescence of *P. clandestinum*, enclosed in leaf sheaths, shows the influence of pressure on the involucre, namely, that there is no clearly recognizable long bristle, the bristles are separated into two systems (left and right) and the bristles themselves are small and thin.

The presence of the usually prolonged, sterile axis of the fascicles of *Pennisetum* may be used to separate this genus from *Cenchrus*, whose fascicle axis is terminated by spikelets.

This study indicates the need for an analysis of the fascicles of those species of *Pennisetum* which have no recognizable fascicle axis (long bristle).

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ZOOLOGY.—*Two new Nephtys (Annelida, Polychaeta) from San Francisco Bay.*

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The Nephtyidae of the Pacific coast of North America have been described and reviewed by Hartman (1938, 1940, 1950). However, the polychaetes of San Francisco Bay have never been studied adequately, and of three distinguishable *Nephtys* found there two require some discussion. The known species is *Nephtys caecoides* Hartman, the other two have been named as a new species and subspecies respectively. The types have been deposited in the U. S. National Museum.

*Nephtys parva*, n. sp.

Fig. 1, a-f

*Description*.—Prostomium a blunt oval, longer than broad and widest halfway along its length. Anterior margin convex. The paired nuchal organs are at the posterolateral margins of the prostomium but cannot be detected when they are inverted. Proboscis with 22 rows of subterminal papillae, six in a row, the proximal one or two of which are very small. There is no median unpaired papilla, and the proximal part of the proboscis is smooth. Recurved branchiae from

the fourth segment to the seventh or eighth last segment. In all parapodia where they occur, the branchiae are comparatively short and stout and their length rarely exceeds the distance between the two rami of the parapodium; they are always longer than the dorsal cirrus. Both the branchiae and the interramal area are heavily ciliated. Parapodia are with no, or very much reduced, preacicular lobes. The notopodial postacicular lobes are rounded. The neuropodial postacicular lobes are also rounded except in the middle of the body where they tend to become somewhat pointed. Neither the pre- nor the postacicular lobes are extensive on any segment. The acicular lobes are rounded except in the posterior parapodia, where they are pointed; in no case are they incised. The preacicular chaetae are barred for the proximal two-thirds of their length. The postacicular chaetae are all capillaries; those in the middle of each bundle are denticulate across the whole width of

the blade and the teeth, which get smaller and smaller extend to the tip of the capillary. No furcate chaetae have been observed. Dorsal cirri are well developed on all segments. Ventral are a little smaller than the corresponding dorsal cirri, except on the first segment, where the ventral cirri are well developed and are slightly longer than the posterior prostomial tentacles and the dorsal cirri are reduced to small papillae.

*Pigmentation.*—Most of the specimens are unpigmented, except for a small group of eyespots appearing as a small patch of dark pigment in the middle of the dorsal surface of the prostomium, and a ring of eye spots encircling the pygidium. On the anterior part of the dorsum of the third segment a pair of large eye spots can be seen beneath the cuticle.

*Size.*—Seventeen specimens have been examined and the size, range and degree of development is considerable. Obviously some of our

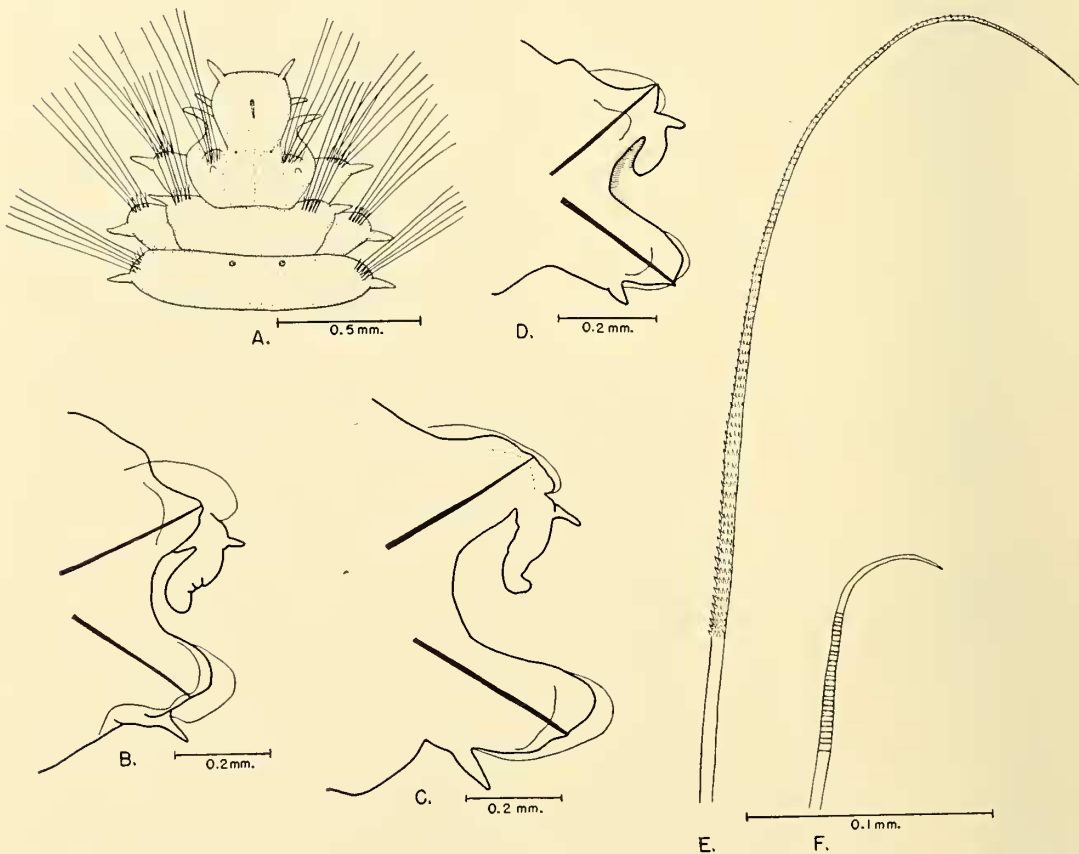


FIG. 1.—*Nephtys parva*, n. sp.: A, Dorsal view of the anterior end of the worm; B, parapodium from the tenth segment; C, parapodium from the twenty-fifth segment; D, parapodium from the thirteenth last segment; E, postacicular chaeta; F, preacicular chaeta.

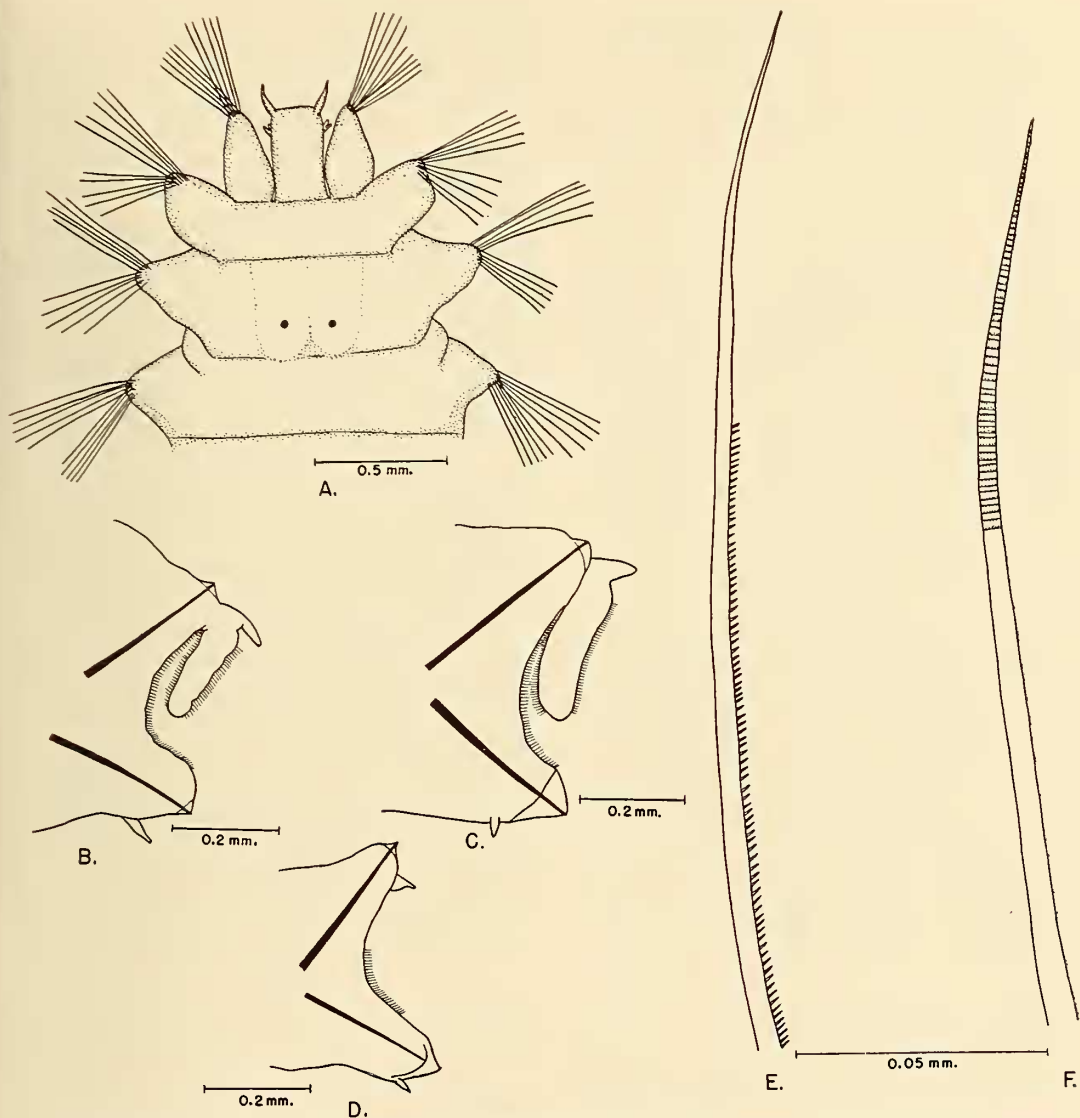


FIG. 2.—*Nephtys cornuta franciscana*, n. subsp.: A, Dorsal view of the anterior end of the worm; B, parapodium from the tenth segment; C, parapodium from the thirtieth segment; D, parapodium from the sixth last segment; E, postaciclar chaeta; F, preaciclar chaeta.

specimens are juvenile, since the smallest is 1.5 mm long (19 segments) and the largest 13 mm long (70 segments). Practically all intermediate lengths and numbers of segments have been found. None of the specimens is sexually mature.

*Type*.—Holotype, U. S. N. M. no. 26464.

*Distribution and habitat*.—Taken from fine mud off Point Richmond in San Francisco Bay, Calif., at depths between 1 and 10 meters. It is possibly intertidal.

*Discussion*.—No mature specimens of this *Nephtys* have been taken so far and since many

of the specimens we have are obviously juveniles, we are by no means convinced that we have seen the adults at all. *Nephtys caecoides* has been taken in the same samples and the possibility that *N. parva* is a juvenile *N. caecoides* must be considered. There are important differences between the two, however:

1. The acicular rami are rounded and not incised as in *Nephtys caecoides*.
2. The branchiae are not shorter than the dorsal cirri in the posterior segments.
3. The dorsal cirri of the first segment are



reduced and neither these nor the ventral cirri of the first segment are flattened and triangular.

4. There is no median unpaired papilla on the proboscis.

5. There are eyespots on the prostomium and a ring of eyespots on the pygidium as well as two large eyespots beneath the cuticle on the third segment, none of which appear in *Nephtys caecoides*.

Most of these differences could conceivably be attributed to developmental features which have not yet reached the adult and definitive state. In all but the presence of eyespots, the differences are in characters which are fairly crucial in the taxonomy of the Nephtyidae and while any single difference taken individually might be attributable to the immaturity of our specimens, it is unlikely that this combination of characters, which is unique, could be disposed of in this way.

***Nephtys cornuta* Berkeley *franciscana*, n. subsp.**

Fig. 2, a-f

*Description*.—The new subspecies agrees with *Nephtys cornuta* Berkeley (1945) except in the following respects:

1. The branchiae are shorter and less heavily ciliated.

2. Barred chaetae appear in postacicular rami of all parapodia and not just in the anterior segments.

3. There is a pair of eyespots on the third segment, they are large and, although beneath the cuticle, are conspicuous.

4. The new subspecies is about half the size of *Nephtys cornuta*.

*Pigmentation*.—Except for the eye spots the worms are unpigmented.

*Size*.—The range in length of the complete worms described by Berkeley was 10–15 mm and they were composed of 32–35 segments. The San Francisco Bay worms are about half this size. The range of length of the 19 specimens we have seen is 2.0–6.5 mm (21–28 segments), and for specimens carrying eggs in the coelom, the length range is 4.0–5.5 mm (23–26 segments). The over-all width is 1 mm. or less.

*Type*.—Holotype, U. S. N. M. no. 26466.

*Distribution and habitat*.—The subspecies is ap-

parently fairly numerous in fine mud deposits off Point Richmond, San Francisco Bay, Calif., at depths between 1 and 10 meters. It is possibly intertidal. It is therefore found in a similar habitat to that in which Weese (1932) discovered *Nephtys cornuta* near Friday Harbor, Wash.

*Discussion*.—The species was described from eight specimens, four of them incomplete, from Friday Harbor, Wash., and Princess Louise Inlet, British Columbia (Berkeley, 1945; Weese, 1932). One of the complete specimens was subsequently examined by Hartman (1950) who added to the original description. Through the kindness of C. Berkeley, we have been able to examine five of the remaining Friday Harbor specimens. In view of the differences, which appear to be constant, between the northern and the San Francisco Bay specimens, we propose to name the local variants as a subspecies. It should be borne in mind that subsequent collections in the intervening regions may show that the two groups of *Nephtys cornuta* represent the opposite ends of a graded series. This is a possibility which must always exist when geographical races are named of a species for which the entire distribution is unknown. However, it seems likely that *Nephtys cornuta* exists as two genetically different and isolated populations in the areas from which it has been recorded and in this event, the naming of a subspecies is justified.

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